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## A NEW SPECIES IN THE NOMEID FISH GENUS *PSENES* FROM THE EQUATORIAL EASTERN PACIFIC[1]

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ABSTRACT. *Psenes sio* n. sp. is based on five specimens 23-66 mm SL from the equatorial eastern Pacific Ocean. The new species belongs to the species-group (others are *P. pellucidus, P. maculatus,* and *P. arafurensis*) with large, laterally compressed, knifelike teeth in the lower jaw. *P. cyanophrys* and *P. whiteleggii* have small conical teeth in both jaws. The new species is characterised by its light color, long pelvic fins, two weak anal spines and 23–24 rays, 18–19 pectoral finrays, and 36–38 vertebrae.

In a recent unpublished yet widely distributed manuscript (Haedrich and Horn, 1969), a new species of *Psenes* was included in a key (p. 36). It was stated explicitly that use of the name in the key did not constitute publication, and it was indicated that a formal description would soon appear in a review of the entire genus. Other responsibilities, however, have virtually brought this work to a halt, and early completion of the review does not seem likely. Therefore, in order to avoid the nomenclatural debacle that I see developing, this note has been prepared describing the new species.

The specimens upon which the new species is based were made available by Jørgen Nielsen, and are housed in Universitetets Zoologiske Museum, Copenhagen (ZMC). They were collected by Dr. Nielsen on Step-I, a cruise conducted by the Scripps Institution of Oceanography. The manuscript has been read by Richard H. Backus and Giles W. Mead. Figure 1 was drawn by E. Leenders.

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Among stromateoid fishes, the genus *Psenes* is distinguished in having two dorsal fins with the first dorsal originating over or before the pectoral insertion, persistent thoracic pelvic fins, a deep to moderately elongate body, and teeth present in some species on the palatines and/or basibranchials but never on the glossohyal. The genus, its relationships, and the nominal species were treated in a general way by Haedrich (1967), though recent findings will modify this account somewhat. Within *Psenes,* there seem to be two species groups. One group (including *P. cyanophrys* and *P. whiteleggii*) is characterized by small, conical, slightly recurved teeth in both the upper and lower jaw. The other group (including *P. pellucidus, P. arafurensis, P. maculatus* and the new species) has small, conical, slightly recurved teeth in the upper jaw and large, laterally flattened, bladelike teeth in the lower jaw.

In recognition of the considerable contributions to marine ichthyology made by the Scripps Institution of Oceanography, the new species will be known as

## *Psenes sio* n. sp.

Figure 1

*Material.* Five specimens, 23-66 mm SL, all in ZMC; those marked with an asterisk* have been X-rayed: *1 spec., 60 mm SL, HOLOTYPE, Step-I sta. 23, 11°10′S 80°01′W, 17 Oct. 1960, 2250-2345 hrs., 0-90 m, 5′ net, surf. temp. 17.8°C. PARATYPES: *1 spec., 66 mm SL, Step-I sta. 80-1, 1°24′S 94°55′W, 2/3 Dec. 1960, 2335-0230 hrs., high-speed net, battered. 2 spec., 26 & 44 mm SL, Step-I sta. 73-1, 4°22′S 95°04′W, 2 Dec. 1960, 0200-0500 hrs., high-speed net, very battered, smaller spec. cleaned-and-stained. *1 spec., 23 mm SL, Step-I sta. 80, 1°59′S 94°55′W, 2 Dec. 1960, 2200 hrs., dipnet-nightlight, surf. temp. 22°C. All specimens are immature.

*Diagnosis.* An elongate, compressed, light-colored *Psenes* with large, compressed close-set teeth in the lower jaw, long pelvic fins, two weak anal spines and 23-24 rays, and 36 to 38 vertebrae.

*Description.* Individual proportions and counts are presented in Table 1.

The body is elongate, the maximum depth of larger specimens being around 30 per cent of the standard length, and is very compressed. The caudal peduncle is tapered, compressed, and somewhat elongate. The musculature, though firm, is translucent, particularly along the anal fin base and over the viscera. The two dorsal fins are scarcely divided. The first dorsal fin originates over the edge of the opercle and comprises 10 to 12 thin brittle spines, the second originates just behind mid-body and comprises 23 to 25 long rays. The entire fin folds partially into a very shallow groove and terminates behind the end of the anal fin. The anus is at mid-body, in a slit. The anal fin commences shortly behind the anus under the third or fourth ray of the second dorsal, and is composed of two weak spines and 23 or 24 long rays. The muscles for elevating the anal rays can be clearly seen, as can the basal elements of both median fins. The pectoral fin is long and fairly broad, with 18 or 19 rays; its base is inclined about 45° to the vertical. The pelvic fins are very long; they insert under the middle or end of the pectoral fin base and extend beyond the anal origin, and are composed of one short spine and five long branched rays. The caudal fin, broken in most specimens, is apparently long and forked; the small elements preceding the principal rays extend well forward on the peduncle. The cycloid scales are very small, and do not appear to extend significantly onto the bases of the median fins. The scales are extremely deciduous, and most are gone; the count of scale pockets along the lateral line of the holotype is ca. 85. The skin is thin; the subdermal mucus canal system is but little developed, and the body pores are very small or wanting.

The head is around 35 per cent of the standard length, its profile sloping. The skin of the top of the head is naked, and pores are clearly visible, particularly those over the head of the hyomandibular. The eye is of moderate size, located a little more than its diameter from the tip of the truncate snout, and does not enter into the profile of the head. There is apparently no adipose tissue around the eye, but somes does extend forward from the front of the eye to surround the nostrils. The two small nostrils are located much nearer to the tip of the snout than to the eye. The end of the maxillary is below the anterior border of the eye, but the angle of the gape is well before the eye. The premaxillary is not protractile. The lacrimal bone is large and transparent, and covers the top of the maxillary. The teeth are uniserial in the jaws. The teeth in the upper jaw are small, conical, slightly recurved, and spaced; the teeth in the lower jaw are large, at least twice as long as those in the upper jaw, compressed and knifelike with very small cusps, and very close-set. The vomer, palatines, and basibranchials appear to be toothless. The oral valves are prominent. The opercles are very thin; their margins are either entire or set with extremely fine spinules. The striated opercle has two very weak flat spines; the angle of the preopercle is rounded but does not bulge backward. The gill-rakers are moderate, blunt, about half the length of the filaments, and bear fine teeth on their inner edges; the rakers are spaced, about 15 on the lower limb of the first arch. The pseudobranch is well developed, but there are no rudimentary rakers below it. The light yellow thymus is clearly visible. There are six branchiostegal rays.

The color in alcohol is tan, darker on the back than on the sides. There is a suggestion of three brownish vertical bands on the after part of the body in some specimens. The first dorsal fin is dark, but all the other fins are whitish. The dark lining of the gill cavity shows clearly through the transparent opercles. The dark peritoneum shows clearly through the thin abdominal wall. The inside of the mouth is light yellow, and the eye is grey.

The skeleton in general is very light. This is particularly apparent in the thin transparent dermal skeleton. There is no supramaxillary bone. The supraoccipital is but little developed. There is a wide opening between the cleithrum and the coracoid. The pelvic bones reach to the cleithrum. There is a large foramen in the scapula. The postcleithrum can be plainly seen through the body wall, and it extends to the lower margin of the body. There are 36 to 38 vertebrae, including the hypural; about 12 to 15 vertebrae appear to be precaudal. In the tail, there are two autogenous haemal spines, four hypurals, two paired uroneurals, and three epurals. The second and third hypurals are broad triangular plates much larger than any other caudal element. The first hypural bears an hypuropophysis. Three free interneurals precede the dorsal fin. The first dorsal interneural supports two spines. The two anal spines are weak.

*Remarks.* Most species of *Psenes* are widely distributed in the tropical and sub-tropical parts of the world ocean. *P. sio,* however, is quite restricted, and has been found only in the eastern Pacific from about 11° S (holotype) to perhaps 10° N (R. Rosenblatt, additional Scripps specimens, *in litt.*). *P. sio* most closely resembles *P. maculatus,* an apparently antitropical species known only from sub-tropical waters in the North and South Atlantic.

Within the range of *Psenes sio,* only *P. cyanophrys* is known to occur for sure. This species may be distinguished from *P. sio* by its small conical teeth that are similar in both jaws (as mentioned above), its color pattern of fine horizontal stripes (*P. sio* has about three indistinct vertical bands), its greater maximum depth (43-52% SL *vs.* 29-41% SL in *P. sio*), its generally greater number of median fin rays (D 24-29 *vs.* 23-25, A 24-28 *vs.* 23-24), and its fewer vertebrae (31 *vs.* 36-38).

As yet unrecorded from the eastern tropical Pacific but known from the western parts of that ocean are *Psenes pellucidus* and *P. arafurensis.* The former has more median finrays and vertebrae (D 27-32, A 26-31, vert. 41-42) than *P. sio,* the latter fewer (D 18-22, A 20-22, vert. 31).

*Psenes whiteleggii,* from the Indian Ocean and Australia, has conical teeth in both jaws and low median finray and vertebral counts (D 17-20, A 17-18, vert. 31-32). The Atlantic *P. maculatus,* the species most similar to *P. sio,* has slightly fewer median finrays and vertebrae (D 22-24, A 22-24, vert. 35) and more pectoral finrays (21-22 *vs.* 19 in *P. sio*) and anal spines (III *vs.* II). The preanal distance is 58-63% SL in *P. maculatus,* and 51-54% SL in *P. sio.*

## LITERATURE CITED

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TABLE 1

Measurements and counts of *Psenes sio* n. sp.

|  | HOLOTYPE<br>Step-I, sta. 23 | PARATYPES:<br>Step-I, sta. 80-1 | Step-I, sta. 77-1 |  | Step-I, sta. 80 |
|---|---|---|---|---|---|
| Total length | 74.5 mm | > 75 mm | — mm | — mm | 26.5 mm |
| Standard length | 60.3 | 65.8 | 43.7 | 25.7 | 23.4 |
| Head length | 21.7 | 22.1 | 13.5 | — | 8.4 |
| Snout | 5.7 | 5.6 | — | — | 2.1 |
| Eye diameter | 6.5 | 6.2 | — | — | 3.1 |
| Length upper jaw | 5.8 | 6.2 | — | — | 3.0 |
| Interorbital width | 5.5 | — | — | — | 2.8 |
| Pectoral length | 15.2 | 15.5 | 11.0 | 6.9 | 5.9 |
| Pelvic length | 13.4 | — | 11.4 | 6.8 | 6.1 |
| Longest $D_1$ spine | — | — | — | — | 3.5 |
| Predorsal distance | 21.9 | 22.4 | 15.6 | 9.8 | 9.3 |
| Preanal distance | 31.5 | 34.1 | 21.4 | 13.2 | 12.6 |
| Maximum depth | 18.5 | 19.5 | 13.5 | 10.3 | 9.6 |
| Depth peduncle | 4.3 | 4.4 | 3.2 | 1.8 | 2.2 |
| Counts: |  |  |  |  |  |
| D | X, 23 | XII, 25 | XII, 25 | XII, 25 | XII, 24 |
| A | II, 24 | II, 23 | II, 23 | II, 23 | II, 23 |
| P | 19 | 19 | 18 | 19 | — |
| Gill rakers | 7+1+14 | 8+1+15 | 8+1+17 | — | — |
| Lat. line scales | 85 ? | — | — | — | — |
| Vertebrae | 15+23 | 15+23 | — | 15+23 | 12+24 |

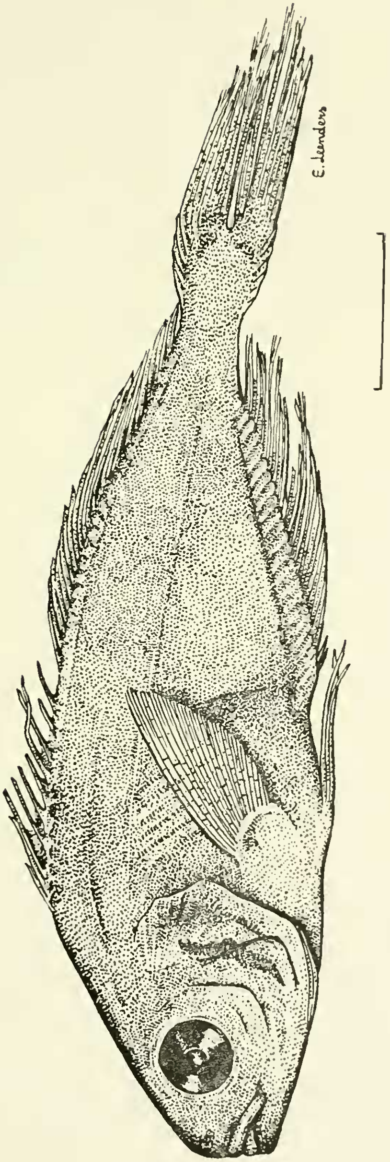

Figure 1. Holotype of *Psenes sio* n. sp., 60 mm SL, 11°10'S, 80°01'W. ZMC specimen, drawn by E. Leenders.